

CLAIMS:

1. A compensating element comprising a closed loop of conductive material having a size for electromagnetic coupling to an inductive loop antenna.
2. The compensating element of claim 1, wherein a parasitic current is induced in the compensating element in response to the electromagnetic coupling to the inductive loop antenna.
3. The compensating element of claim 1 wherein the conductive material comprises one of a die cut metal foil, a patterned metal foil, an electroplated conductive metal, a printed conductive ink, and a printed precursor material reduced to a conductive state.
4. The compensating element of claim 1 having a substantially rectilinear shape.
5. The compensating element of claim 1 having a substantially circular shape.
6. The compensating element of claim 1 further comprising a substrate upon which the closed loop is disposed.
7. The compensating element of claim 6 further comprising an adhesive layer disposed on one side of the substrate.
8. The compensating element of claim 7 wherein the compensating element and the adhesive layer are disposed on the same side of the substrate.
9. The compensating element of claim 7 wherein the compensating element and the adhesive layer are disposed on opposite sides of the substrate.

10. A radio frequency identification (RFID) tag, comprising:
 - an inductive loop antenna; and
 - a compensating element positioned for electromagnetic coupling to the inductive loop antenna.
11. The RFID tag of claim 10, wherein a parasitic current is induced in the compensating element by a primary current in the inductive loop antenna.
12. The RFID tag of claim 10 wherein the compensating element is positioned for electromagnetic coupling to the inductive loop antenna such that an RFID system interrogating antenna is able to detect the compensated RFID tag when in close proximity to other RFID tags.
13. The RFID tag of claim 10, further including a RFID die having identification information stored therein.
14. The RFID tag of claim 10 wherein the compensating element comprises a closed loop of conductive material.
15. The RFID tag of claim 14 wherein the closed loop has a substantially rectilinear shape.
16. The RFID tag of claim 14 wherein the closed loop has a substantially circular shape.
17. The RFID tag of claim 14 wherein the closed loop is electrically isolated from the inductive loop antenna.
18. The RFID tag of claim 14 wherein the closed loop is electrically connected to the inductive loop antenna.

19. The RFID tag of claim 14 wherein the closed loop is disposed within an innermost loop of the inductive loop antenna.
20. The RFID tag of claim 14 wherein the closed loop is disposed between loops of the inductive loop antenna.
21. The RFID tag of claim 14 wherein the closed loop is disposed outside an outermost loop of the inductive loop antenna.
22. The RFID tag of claim 14 wherein the compensating element has an angular displacement of between 0 and 45 degrees with respect to an axis of the inductive loop antenna.
23. The RFID tag of claim 14 wherein the conductive material comprises one of a die cut metal foil, a patterned metal foil, an electroplated conductive metal, a printed conductive ink, and a printed precursor material reduced to a conductive state.
24. The RFID tag of claim 14 wherein the closed loop is disposed within 10 line widths of at least one loop of the inductive loop antenna.
25. The RFID tag of claim 14 wherein the closed loop is disposed within 2 line widths of at least one loop of the inductive loop antenna.
26. The RFID tag of claim 10 wherein the compensating element has an axis that is substantially aligned with an axis of the inductive loop antenna.
27. The RFID tag of claim 10 wherein the compensating element lies substantially in a plane parallel and proximate to a plane of the inductive loop antenna.
28. The RFID tag of claim 10 wherein the compensating element is substantially coplanar with the inductive loop antenna.

29. The RFID tag of claim 10 wherein the RFID tag resonates at a frequency of approximately 13.56 ± 1.0 MHz.
30. The RFID tag of claim 10 wherein the compensating element is physically separate from the inductive loop antenna.
31. The RFID tag of claim 10 wherein the compensating element comprises at least one loop of the inductive loop antenna electrically connected to at least one other loop of the inductive loop antenna.
32. The RFID tag of claim 31 wherein the closed loop comprises at least two loops of the inductive loop antenna, and wherein each of the two loops of the inductive loop antenna is electrically connected to a different one other loop of the inductive loop antenna.
33. The RFID tag of claim 32 wherein the at least two loops of the inductive loop antenna electrically connected to at least one other loop of the inductive loop antenna are adjacent loops.
34. The RFID tag of claim 32 wherein the at least two loops of the inductive loop antenna electrically connected to at least one other loop of the inductive loop antenna are non-adjacent loops.
35. The RFID tag of claim 31 wherein the at least one loop of the inductive loop antenna is electrically shorted to the at least one other loop of the inductive loop antenna.

36. A radio frequency identification (RFID) system, comprising:
 - a storage area to store a plurality of articles each having an associated one of a plurality of RFID tags, and wherein at least one of the RFID tags is a compensated RFID tag;
 - an interrogating antenna proximate the storage area to produce an interrogating electromagnetic field sufficient to induce a response from the plurality of RFID tags; and
 - an RFID reader coupled to the interrogating antenna for controlling power to the antenna and to receive information from the RFID tags communicated by the interrogating antenna,

wherein the compensated RFID tag comprises an inductive loop antenna and a compensating element positioned for electromagnetic coupling to the inductive loop antenna such that the interrogating antenna is able to communicate with the compensated RFID tag even when in the compensated RFID tag is in the presence of the other RFID tags.
37. The system of claim 36 wherein a parasitic current is induced in the compensating element by a primary current in the inductive loop antenna.
38. The system of claim 36 further comprising an article management system to receive the information from the RFID reader and store the information in a database.
39. The system of claim 36 further comprising a remote computer coupled to the article management system to present the information to a remote user.
40. The system of claim 36 wherein the storage area includes at least one of a shelving unit, a cabinet, a vertical file separator, a smart cart, and a desktop reader.
41. The system of claim 36 wherein the information includes location information for the article within the storage area.
42. The system of claim 36 where the articles having associated RFID tags include at least one of files and documents.

43. The compensated RFID tag of claim 36 wherein the compensating element is disposed within 10 line widths of at least one loop of the inductive loop antenna.
44. The compensated RFID tag of claim 36 wherein at least some of the other RFID tags are uncompensated RFID tags.
45. The compensated RFID tag of claim 36 wherein at least some of the other RFID tags are compensated RFID tags.
46. A Radio Frequency Identification (RFID) tag for placement on a conductive surface, comprising:
 - a substrate;
 - an inductive loop antenna positioned on the substrate;
 - a compensating element positioned for electromagnetic coupling to the inductive loop antenna; and
 - a dielectric spacer positioned between the substrate and the conductive surface.
47. The RFID tag of claim 46 wherein the dielectric spacer has a dielectric constant less than 10.
48. The RFID tag of claim 47 wherein the dielectric spacer has a dielectric constant less than 3.
49. The RFID tag of claim 46 wherein the dielectric spacer has a thickness of less than 10mm.
50. The RFID tag of claim 49 wherein the dielectric spacer has a thickness of less than 5mm.